KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS
2016/2017 ACADEMIC YEAR

SECOND YEAR SECOND SEMESTER
SUPPLIMETARY EXAMINATIONS

FOR THE DEGREE OF B.ED (SCIENCE)

COURSE CODE: SCHH 214

COURSE TITLE: BIOCHEMISTRY

DURATION: 2 HOURS

DATE: 21ST SEPTEMBER 2017 TIME: 3 – 5PM

INSTRUCTIONS TO CANDIDATES

- Answer **QUESTION ONE** (Compulsory) and any other two (2) Questions.
- Indicate **answered questions** on the front cover.
- Start every question on a new page and make sure question's number is written on each page.

This paper consists of **3** printed pages. Please Turn Over

QUESTION ONE [30 MARKS]

1 a). Define the following terms. (5marks)

I). Biochemistry

II). Disaccharides

III). Zwitterion ion

IV). Steroids

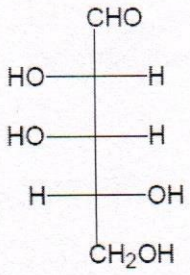
V). Glycolysis

b). Differentiate between the following model in enzyme catalysis

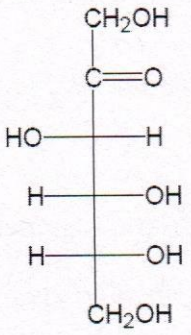
i). Lock and Key model (2marks)

ii). Induced fit model (2marks)

C) Identify the following compounds as D or L isomers, and draw their mirror images. (4marks)



lyxose



fructose

d). Differentiate between the following terms.(4marks)

i. Saturated fatty acids and unsaturated fatty acids

ii. Fats and Oils

e). State four classification of amino acid and give one example of each.(4marks)

f). State three applications of spectrophotometry(3marks)

g). Electrophoresis of a mixture of lysine, histidine, and cysteine which has the following isoelectric point 9.74, 7.64 and 5.02 respectively is carried out at PH 7.64. Describe the behavior of each amino acid under these conditions (4marks)

h). Draw the structure of ATP (2marks)

QUESTION TWO [20MARKS]

a). State and explain in detail the levels of proteinsstructures (8marks)

b). State five functions of lipids (5marks)

c). Explain the following reactions of triglycerides

i). Catalytic hydrogenation (3marks)

ii). Saponification (3marks)

d). State two functional groups that are found in carbohydrates(1marks)

QUESTION THREE [20MARKS]

aBriefly explain the concept of enzyme inhibition by the following. (5marks)

i). Reversible

ii). Irreversible

b). Explain some of the environmental factors that affect UV-Visible absorption by nucleic acids. (6marks)

c). Describe the Steps followed in differential precipitation of proteins (6marks)

d). Using the models state and explain substrate specificity of enzymes. (3marks)

QUESTION FOUR[20MARKS]

a).i). Draw a sketch showing the basic components of High-performance liquid chromatography (HPLC) and label the parts. (5marks)

ii). State the functions of mobile phase, pumping systems, chromatographic column ,detector, and thermostats respectively (5marks)

b).Differentiate between the following terms.

i). Amylose and Amylopectin (6marks)

ii). Dipole-dipole attractive forces and Salt bridges (4marks)

QUESTION FIVE [20MARKS]

Explain the process of glycolysis. (20marks)